Amendments to the Claims:

This listing of claims will replace all prior listings of claims in the application:

Listing of Claims:

1. (original) An isolated peptide of at least 5 amino acids comprising a unique portion of a semaphorin, and said peptide has a semaphorin binding specificity.

2. (original) An isolated peptide according to claim 1 wherein said semaphorin comprises a human semaphorin.

3. (currently amended) An isolated peptide according to claim 1 wherein the amino acid sequence of said unique portion comprises a sequence selected from the group consisting of:

(a) [DE]C[QKRAN]N[YFV]I (SEQ. ID NO: 1)
C[QKRAN]N[YFV]I[RKQT] (SEQ. ID NO: 2)

(b) CGT[NG][ASN][YFHG][KRHNQ] (SEQ. ID NO: 3)
CGT[NG][ASN]XXP (SEQ. ID NO: 4)
CGT[NG]XXXPX[CD] (SEQ. ID NO: 5)
CGTXXXXPX[CD]XX[YI] (SEQ. ID NO: 6)

(c) [RIQV][GA][LVK][CS]P[FY][DN] (SEQ. ID NO: 7)
[CS]P[FY][DN]P[DERK][HLD] (SEQ. ID NO: 8)
GX[GA]X[CS]PY[DN]P (SEQ. ID NO: 9)

(d) L[FY]S[GA]T[VNA]A (SEQ. ID NO: 10)
L[FY]SXTXA[DE][FY] (SEQ. ID NO: 11)
[FY]S[GA]T[VNA]A[DE][FY] (SEQ. ID NO: 12)

(e) L[ND][AK]PNFV (SEQ. ID NO: 13)

(f) FFFRE (SEQ. ID NO: 14)

FF[FY]RE[TN] (SEQ. ID NO: 15)
FFRE[TN]A (SEQ. ID NO: 16)
F[FY]RE[TN]A (SEQ. ID NO: 17)
YFF[FY]RE (SEQ. ID NO: 18)
[FY]FF[FY]RE (SEQ. ID NO: 19)
[FY][FY][FY]RE[TN]A (SEQ. ID NO: 20)
[IV][FY]F[FY][FY]RE (SEQ. ID NO: 21)
D[KFY]V[FY][FYIL][FYIL][FY] (SEQ. ID NO: 22)
[VI][FY][FYIL][FYIL]F[RT]X[TN] (SEQ. ID NO: 23)
[VI][FY][FYIL][FYII][FY][RT][EDV][TN] (SEQ. ID NO: 24)

(g) E[FY]IN[CS]GK (SEQ. ID NO: 25)
[FY]INCGK[AVI] (SEQ. ID NO: 26)

(h) R[VI][AG][RQ][VI]CK (SEQ. ID NO: 27)
R[VI]X[RQ][VI]CXXD (SEQ. ID NO: 28)
GK[VAI]XXXR[VAI]XXXCK (SEQ. ID NO: 29)

(i) [RKN]W[TAS][TAS][FYL]L[KR] (SEQ. ID NO: 30)
[FY]L[KR][AS]RL[NI]C (SEQ. ID NO: 31)
[NI]CS[IV][PS]G (SEQ. ID NO: 32)
W[TAS][TAS][FYL]LK[ASVIL]XL (SEQ. ID NO: 33)
W[TAS][TAS]XLKXXLXC (SEQ. ID NO: 34)
WX[TS]XLKXXLXC (SEQ. ID NO: 35)

(j) [FY][FY][ND]EIQS (SEQ. ID NO: 36)
[FY]P[FY][FY][FY][ND]E (SEQ. ID NO: 37)

(k) GSA[VIL]CX[FY] (SEQ. ID NO: 38)
SA[VIL]CX[FY]XM (SEQ. ID NO: 39)

(l) NS[NA]WL[PA]V (SEQ. ID NO: 40)

(m) [VLI]P[EDYSF]PRPG (SEQ. ID NO: 41)
[VLI]PXP[RA]PGXC (SEQ. ID NO: 42)
P[EDYSF]PRPG[TQS]C (SEQ. ID NO: 43)

(n) DP[HFY]C[AG]W (SEQ. ID NO: 44)
P[HFY]C[AG]WD (SEQ. ID NO: 45)
DPXC[AG]WD (SEQ. ID NO: 46)

CXXXXDPXCXWD (SEQ. ID NO: 47)
CXXXDPXCXWD (SEQ. ID NO: 48)
CXXDPXCXWD (SEQ. ID NO: 49)
CXXCXXXXDXXCXWD (SEQ. ID NO: 50)
CXXCXXXDXXCXWD (SEQ. ID NO: 51)
CXXCXXDXXCXWD (SEQ. ID NO: 52)

4. (currently amended) An isolated peptide according to claim 1 wherein the amino acid sequence of said unique portion comprises a sequence selected from the group consisting of:

(a) [DE]C[QKRAN]N[YFV]I (SEQ. ID NO: 1)
C[QKRAN]N[YFV]I[RKQT] (SEQ. ID NO: 2)

(b) CGT[NG][AS][YFHG][KRHNQ] (SEQ. ID NO: 79)
CGT[NG][ASN][YFH][KRHNQ] (SEQ. ID NO: 80)
CGT[NG][AS]XXP (SEQ. ID NO: 81)

(c) [RIQV][GA][LVK][CS]P[FY][DN] (SEQ. ID NO: 07)
[CS]P[FY][DN]P[DERK][HLD] (SEQ. ID NO: 08)
GX[GA]X[CS]PY[DN]P (SEQ. ID NO: 09)

(d) L[FY]S[GA]T[VNA]A (SEQ. ID NO: 10)
L[FY]SXTXA[DE][FY] (SEQ. ID NO: 11)
[FY]S[GA]T[VNA]A[DE][FY] (SEQ. ID NO: 12)

(e) L[ND][AK]PNFV (SEQ. ID NO: 13)

(f) FFFRE (SEQ. ID NO: 14)
FF[FY]RE[TN] (SEQ. ID NO: 15)
FFRE[TN]A (SEQ. ID NO: 16)
F[FY]RE[TN]A (SEQ. ID NO: 17)
YFF[FY]RE (SEQ. ID NO: 18)
[FY]FF[FY]RE (SEQ. ID NO: 19)
[FY][FY][FY]RE[TN]A (SEQ. ID NO: 20)
[IV][FY]F[FY][FY]RE (SEQ. ID NO: 21)
D[KFY]V[FY][FYL][FYIL][FY] (SEQ. ID NO: 22)
D[KFY]V[FY][FYIL][FYI][FY] (SEQ. ID NO: 82)

[VI][FY][FYL][FYIL]F[RT]X[TN] (SEQ. ID NO: 83)
[VI][FY][FYIL][FYI]F[RT]X[TN] (SEQ. ID NO: 84)
[VI][FY][FYIL][FYIL]FRX[TN] (SEQ. ID NO: 85)
[VI][FY][FYL][FYIL][FY][RT][EDV][TN] (SEQ. ID NO: 86)

(g) E[FY]IN[CS]GK (SEQ. ID NO: 25)
[FY]INCGK[AVI] (SEQ. ID NO: 26)

(h) R[VI][AG][RQ][VI]CK (SEQ. ID NO: 27)
R[VI]X[RQ][VI]CXXD (SEQ. ID NO: 28)
GK[VAI]XXXR[VAI]XXXCK (SEQ. ID NO: 29)

(i) [RKN]W[TA][TAS][FYL]L[KR] (SEQ. ID NO: 87)
[FY]L[KR][AS]RL[NI]C (SEQ. ID NO: 31)
[NI]CS[IV][PS]G (SEQ. ID NO: 32)
W[TA][TAS][FYL]LK[ASVIL]XL (SEQ. ID NO: 88)
W[TAS][TAS][FYL]LK[ASIL]XL (SEQ. ID NO: 89)
W[TA][TAS]XLKXXLXC (SEQ. ID NO: 90)

(j) [FY][FY][ND]EIQS (SEQ. ID NO: 36)
[FY]P[FY][FY][FY][ND]E (SEQ. ID NO: 37)

(k) GSA[VIL]CX[FY] (SEQ. ID NO: 38)
SA[VI]CX[FY]XM (SEQ. ID NO: 39)

(1) NS[NA]WL[PA]V (SEQ. ID NO: 40)

(m) [VLI]P[EDYSF]PRPG (SEQ. ID NO: 41)
[VLI]PXPRPGXC (SEQ. ID NO: 91)
P[EDYSF]PRPG[TQS]C (SEQ. ID NO: 43)

(n) DP[HFY]C[AG]W (SEQ. ID NO: 44)
P[HFY]C[AG]WD (SEQ. ID NO: 45)
DPXC[AG]WD (SEQ. ID NO: 46)
CXXXXDPXCXWD (SEQ. ID NO: 47)
CXXXDPXCXWD (SEQ. ID NO: 48)
CXXDPXCXWD (SEQ. ID NO: 49)
CXXCXXXXDXXCXWD (SEQ. ID NO: 50)
CXXCXXXDXXCXWD (SEQ. ID NO: 51)
CXXCXXDXXCXWD (SEQ. ID NO: 52)

5. (currently amended) An isolated peptide according to claim 1 wherein the amino acid sequence of said unique portion comprises a sequence selected from the group consisting of:

(a) DCQNYI (SEQ. ID NO: 67)
(b) CGT[NG][AS]XXP (SEQ. ID NO: 68)
(c) GX[SC]PYDP (SEQ. ID NO: 69)
(d) LYSGT[VNA]A (SEQ. ID NO: 70)
(e) LNAPNFV (SEQ. ID NO: 71)
(f) [FY]FF[FY]RE (SEQ. ID NO: 19)
(g) E[FY]IN[CS]GK (SEQ. ID NO: 25)
(h) R[VI]ARVCK (SEQ. ID NO: 72)
(i) W[TA][TS][FY]LK[AS]RL (SEQ. ID NO: 73)
(j) PFYF[ND]EIQS (SEQ. ID NO: 74)
(k) GSAVCX[FY] (SEQ. ID NO: 75)
(1) NSNWL[PA]V (SEQ. ID NO: 76)
(m) P[ED]PRPG[TQS]C (SEQ. ID NO: 77)
(n) DPYC[AG]WD (SEQ. ID NO: 78)

6. (original) An isolated antibody that specifically binds a peptide according to claim 1.

7. (original) An isolated nucleic acid comprising a nucleotide sequence encoding a peptide according to claim 1 wherein said sequence is joined to a nucleotide not naturally joined to said sequence and said sequence is other than that of the A39 ORF of vaccinia virus.

8. (original) A cell comprising a nucleic acid according to claim 7.

9. (original) A transgenic rodent comprising a nucleic acid according to claim 7 wherein said nucleic acid is xenogeneic to said rodent.

10. (original) A process for the production of a recombinant unique portion of a semaphorin comprising culturing the cell of Claim 8 under conditions suitable for the expression of said peptide, and recovering said peptide.

11. (original) A method of identifying a pharmacological agent useful in the diagnosis or treatment of disease associated with the binding of a semaphorin to a semaphorin receptor, said method comprising the steps of:

contacting a panel of prospective agents with a peptide according to claim 1;

measuring the binding of a plurality of said prospective agents to said peptide;

identifying from said plurality a pharmacological agent which specifically binds said peptide;

wherein said pharmacological agent is useful in the diagnosis or treatment of disease associated with the binding of a semaphorin to a cellular receptor.

12. (original) A method of diagnosing a patient for a predisposition to neurological disease associated with a genetic locus, said method comprising the steps of:

isolating somatic cells from a patient;

isolating genomic DNA from said somatic cells;

contacting said genomic DNA with a with a probe comprising a DNA sequence encoding a peptide according to claim 1 under conditions wherein said probe hybridizes to homologous DNA;

identifying a region of said genomic DNA which hybridizes with said probe; wherein the presence, absence or sequence of said region correlates with a predisposition to a neurological disease.

13. (original) A method of treating a patient with neurological injury or disease or a pathological viral infection, said method comprising the steps of:

administering to a patient a therapeutically effective dosage of a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a peptide according to claim 1;

wherein said peptide modulates neural cell growth cone function or viral pathogenicity in said patient.

14. (original) An isolated polypeptide comprising an amino acid sequence substantially similar to that of a semaphorin, and said polypeptide has a semaphorin binding specificity.

15. (original) An isolated peptide of at least about 5 amino acids comprising a unique portion of a semaphorin receptor, and said peptide has a semaphorin receptor binding specificity.

16. (original) An isolated antibody that specifically binds a peptide according to claim 15.

17. (original) An isolated nucleic acid comprising a nucleotide sequence encoding a peptide according to claim 15 wherein said sequence is joined to a nucleotide not naturally joined to said sequence.

18. (original) A cell comprising a nucleic acid according to claim 17.

19. (original) A process for the production of a recombinant unique portion of a semaphorin receptor peptide according to claim 15 comprising culturing the cell of Claim 13 under conditions suitable for the expression of said peptide, and recovering said peptide.

20. (original) A method of identifying a pharmacological agent useful in the diagnosis or treatment of disease associated with the binding of a semaphorin to a cellular receptor, said method comprising the steps of:

contacting a panel of prospective agents with a peptide according to claim 15;

measuring the binding of a plurality of said prospective agents to said peptide;

identifying from said plurality a pharmacological agent which specifically binds said peptide;

wherein said pharmacological agent is useful in the diagnosis or treatment of disease associated with the binding of a semaphorin to a cellular receptor.

21. (original) A method of diagnosing a patient for a predisposition to neurological disease associated with a genetic locus, said method comprising the steps of:

isolating somatic cells from a patient;

isolating genomic DNA from said somatic cells;

contacting said genomic DNA with a with a probe comprising a DNA sequence encoding a peptide according to claim 15 under conditions wherein said probe hybridizes to homologous DNA;

identifying a region of said genomic DNA which hybridizes with said probe;

wherein the presence, absence or sequence of said region correlates with a predisposition to a neurological disease.

22. (original) A method of treating a patient with neurological injury or disease or a pathological viral infection, said method comprising the steps of:

administering to a patient a therapeutically effective dosage of a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a peptide according to claim 15.

wherein said peptide modulates neural cell growth cone function or viral pathogenicity in said patient.

23. (original) An isolated polypeptide comprising an amino acid sequence substantially similar to that of a semaphorin receptor, and said polypeptide has a semaphorin receptor binding specificity.